

# Clarke®



WARNING: A suitable welding headshield must be worn during use  
WARNING: Read these instructions before using the machine

## 100 AMP ARC WELDER

MODEL NO: EASIARC 110

PART NO: 6010942

### OPERATION & MAINTENANCE INSTRUCTIONS



LS0311

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## INTRODUCTION

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Thank you for purchasing this CLARKE Welder.

Before attempting to operate the machine, it is essential that you read this manual thoroughly and carefully follow all instructions given. In doing so you will ensure the safety of yourself and that of others around you, and you can also look forward to the welder giving you long and satisfactory service.

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## GUARANTEE

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This CLARKE product is guaranteed against faulty manufacture for a period of 12 months from the date of purchase. Please keep your receipt as proof of purchase.

This guarantee is invalid if the product is found to have been abused or tampered with in any way, or not used for the purpose for which it was intended.

Faulty goods should be returned to their place of purchase, no product can be returned to us without prior permission.

This guarantee does not effect your statutory rights.

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## ENVIRONMENTAL PROTECTION

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Do not dispose of this product with general household waste. All tools, accessories and packaging should be sorted, taken to a re-cycling centre and disposed of according to the laws governing Waste Electrical and Electronic Equipment.

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## ACCESSORIES

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The following are some of the accessories available from your CLARKE dealer. Please quote the part numbers shown below:

DESCRIPTION	PART NUMBER
<b>CWH6 Arc Activated Welding Headshield</b>	6000671
1.6 mm Welding Electrodes	3050550
2 mm Welding Electrodes	3050555
2.5 mm Welding Electrodes	3050560

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# GENERAL SAFETY INSTRUCTIONS

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**WARNING: WHEN USING ELECTRICAL TOOLS, BASIC SAFETY PRECAUTIONS SHOULD ALWAYS BE FOLLOWED TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK AND PERSONAL INJURY.**

**WARNING: READ ALL THESE INSTRUCTIONS BEFORE ATTEMPTING TO OPERATE THIS PRODUCT AND KEEP THESE INSTRUCTIONS IN A SAFE PLACE.**

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## ELECTRIC SHOCK

- Remove the plug from the socket and wait 5 minutes to allow the capacitors to discharge before carrying out servicing or maintenance.
- Do not touch live electrical parts.
- Never use electrode holders or cables which are damaged.
- Keep the working environment, equipment, cables and clothing free from grease, oil, moisture and dirt.
- Ensure the welding machine has been correctly earthed.
- The operator must be insulated from the floor and work bench, using a dry insulation mat.
- Always ensure a second person is present in case of accident.
- Never change electrodes with bare hands or damp gloves.
- Keep welding cables away from power cables.
- Regularly inspect the condition of the cables for signs of damage.
- Remove the plug from the mains socket when not in use, do not leave the machine unattended.
- Ensure the earth clamp is secured to bare metal adjacent to the weld seam, and when not in use, is

insulated for safety. - Keep all equipment well maintained.

- The operator shall prevent gas cylinders in the vicinity of the workpiece from becoming part of the welding circuit.

## FUMES & GASES

- The welding process generates hazardous fumes as a by-product. Inhalation of these fumes is hazardous to health.
- Keep your head away from the weld to avoid breathing the fumes.
- If welding in confined spaces, ensure adequate ventilation and use a fume extractor.
- By-products of welding can react to create a toxic/explosive environment.

## FIRE OR EXPLOSION

Welding can cause fire and explosions. Precautions should be taken to prevent these hazards.

- Before starting work ensure the area is clear of flammable materials.
- Move any combustible materials to a safe distance, especially substances likely to generate a dangerous vapour.

- The welding arc can cause serious burns. Avoid contact with the skin.
- Sparks and molten metal are ejected during welding. Take precautions to prevent fire.
- Sparks and molten metal can pass through gaps. Be aware that fire can start out of sight.
- Do not weld pressurised containers, or containers containing flammable vapours e.g. fuel tanks.
- Always have appropriate fire fighting equipment to hand suitable for use in electrical environments.
- Avoid carrying any fuels with you e.g. cigarette lighters or matches.

## **PERSONAL PROTECTION**

- The body should be protected by suitable clothing.
- The use of neck protection may be necessary against reflected radiation.
- Arc welding machines generate a magnetic field which is detrimental to pacemakers. Consult your doctor before going near active welding equipment/operations.
- The UV and IR radiation generated by welding is highly damaging to the eyes, causing burns. This can also affect the skin.
- Always use a suitable welding shield equipped with appropriate protective filters.
- Where there are pedestrians and traffic, ensure a protective screen is used to avoid accidental arc glare.
- Do not weld in the vicinity of children or animals and ensure no

one is looking before striking an arc.

- Wear hearing protection if required.
- Allow the weld time to cool. Hot metal should never be handled without gloves
- Take care when adjusting or maintaining the torch, make sure it has had time to cool sufficiently and the welder is disconnected from the mains supply.
- First aid facilities and a qualified first aid person should be available unless medical facilities are close by, for immediate treatment of flash burns of the eyes and for skin burns.
- A hard hat should be worn when others are working overhead.
- Flammable hair sprays/gels should not be used by persons intending to weld or cut.

## **PROTECTIVE CLOTHING**

- Wear gauntlet gloves designed for use in welding,
- Wear an apron, and protective shoes.
- Wear cuffless trousers to avoid entry of sparks and slag.
- Avoid oily, greasy clothing.
- Protective head and shoulder coverings should be worn when overhead welding.

- Wear a welding headsheild with appropriate filter lenses or plates (protected by clear glass). This is a MUST for welding (and chipping) to protect the eyes from radiant energy and splatter. Replace cover glass when broken, pitted, or splattered.

**NOTE: ALL protective wear inc. masks & head shields MUST comply with PPE Directive 89/686/EEC**

### **ADDITIONAL SAFETY PRECAUTIONS FOR ARC WELDERS**

- NEVER attempt to remove any of the exterior panels unless the machine is disconnected from the supply.
- NEVER use the machine with any of the panels removed.
- NEVER attempt any electrical or mechanical repair unless your are a qualified technician. If you have a problem with the machine contact your local CLARKE dealer.
- NEVER use or store in a wet/damp environment. DO NOT EXPOSE TO RAIN.
- NEVER allow children or animals in the vicinity of a welding operation.
- ALWAYS remove all flammable materials from the welding area.
- ALWAYS ensure that there is full free air circulating around the outer casing of the machine, and that the louvres are unobstructed.
- Welding arc can seriously damage your eyes. Both the operator and any spectators should always use a proper welding face shield or helmet, with suitable filter lenses. Proper gloves and working clothes should be worn at all times.
- ALWAYS wear a pair of safety spectacles/goggles when chipping away slag after welding,. Remember, ordinary eye glasses are not safety gasses.
- ALWAYS ensure there is adequate ventilation or extraction in the work area, as the welding process gives off toxic fumes.
- ALWAYS ensure there is a fire extinguisher on hand.
- ALWAYS ensure that a medical supply is on hand, and that treatment for burns is available

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## **SAFETY SYMBOLS**

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**General Warning,** indicates that failing to follow these instruction could result in injury or damage to the machine.



**Recycle unwanted materials instead of disposing of them as waste. All tools, accessories and packaging should be sorted, taken to a recycling centre and disposed of in a manner which is compatible with the environment.**

## ELECTRICAL CONNECTIONS



**WARNING! Read these electrical safety instructions thoroughly before connecting the product to the mains supply.**

Before switching the product on, make sure that the voltage of your electricity supply is the same as that indicated on the rating plate. This product is designed to operate on 230VAC 50Hz. Connecting it to any other power source may cause damage.

This product may be fitted with a non-rewireable plug. If it is necessary to change the fuse in the plug, the fuse cover must be refitted. If the fuse cover becomes lost or damaged, the plug must not be used until a suitable replacement is obtained.

If the plug has to be changed because it is not suitable for your socket, or due to damage, it should be cut off and a replacement fitted, following the wiring instructions shown below. The old plug must be disposed of safely, as insertion into a mains socket could cause an electrical hazard.

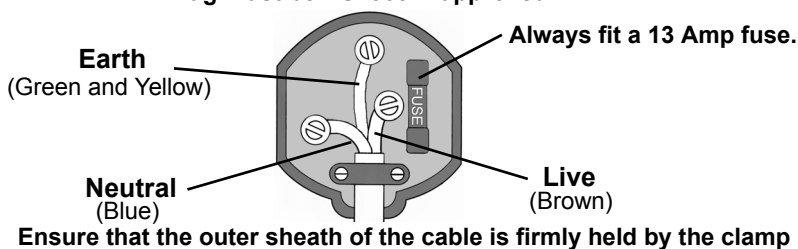


**WARNING! The wires in the power cable of this product are coloured in accordance with the following code:  
Blue = Neutral Brown = Live Yellow and Green = Earth**

If the colours of the wires in the power cable of this product do not correspond with the markings on the terminals of your plug, proceed as follows.

- The wire which is coloured **Blue** must be connected to the terminal which is marked **N** or coloured **Black**.
- The wire which is coloured **Brown** must be connected to the terminal which is marked **L** or coloured **Red**.
- The wire which is coloured **Yellow and Green** must be connected to the terminal which is marked **E** or  $\perp$  or coloured **Green**.

**Plug must be BS1363/A approved.**



**We strongly recommend that this machine is connected to the mains supply via a Residual Current Device (RCD)**

If in any doubt, consult a qualified electrician. DO NOT attempt any repairs yourself.

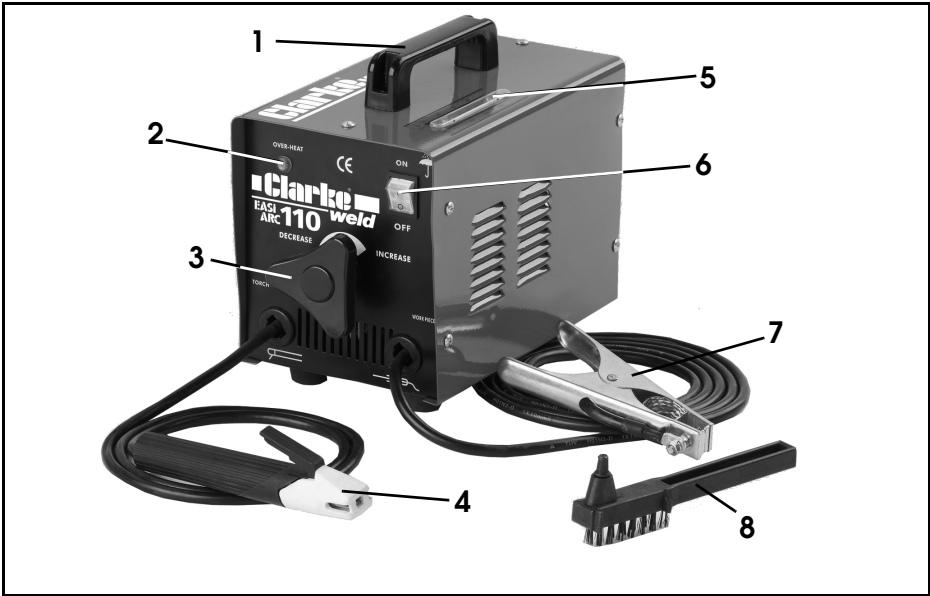
# UNPACKING

Any damage or deficiency should be reported to your CLARKE dealer immediately.

The components include the following:

- 1 x 100 Amp AC Arc Welder
- 1 x Combination Wire Brush & Hammer
- 1 x Clarke Instruction Manual

# OVERVIEW



NO	DESCRIPTION	NO	DESCRIPTION
1	Handle	5	Welding Current Scale
2	Overload Indicator	6	On/Off Switch
3	Welding Current Dial	7	Earth Clamp
4	Welding Rod (Electrode) Holder	8	Combination Wire Brush & Hammer

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## **ARC WELDING PRINCIPLES**

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A consumable electrode is connected to a high voltage supply which creates an electric arc between the electrode and the workpiece. The arc is used to create the required heat to turn the metal into a molten state. The electrode is also used as a filler.

The shielding gas is created from the flux within the welding rod (electrode).

When using the welder outside, you may need to take measures to erect a wind break to make sure the shielding gas is not blown away, thereby leaving a poor quality weld.

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## **PREPARATION FOR USE**

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### **FITTING THE WELDING ROD**

1. Select the appropriate welding rod, and insert it into the welding rod holder.
  - It should be approximately the same thickness as the workpieces being welded.

### **PREPARING THE WORKPIECE**

The area being welded should be perfectly clean. Any coating, plating or corrosion must be removed, otherwise a good weld will be impossible to achieve.



# OPERATING THE WELDER

## THERMAL CUTOUT

If the machine stops at any time and the amber light on the front panel illuminates, the thermal cutout has activated.

Wait until the transformer has cooled sufficiently (the amber light goes out) before restarting work.



## ATTACHING THE EARTH CLAMP

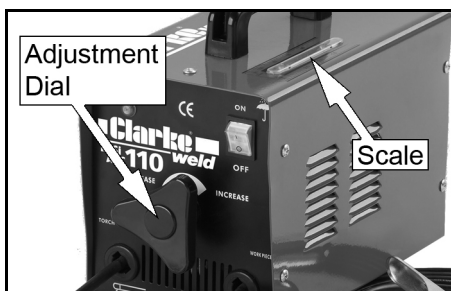
Attach the earth clamp firmly to the workpiece as close as possible to the point of weld.

**IMPORTANT:** Ensure that the earth clamp is attached to clean, solid metal. If necessary, thoroughly clean with a wire brush or similar to guarantee a good connection.

## SWITCHING ON

1. Select the welding current by turning the handwheel and observing the setting on the scale, on top of the machine.

The chart below is an indicator of the thickness of material/ welding rod thickness and the corresponding welding current. This is intended as a guide only.



Size of welding rod		Amperage setting
16 swg	1.5 mm	40-55 Amps
14 swg	2.0 mm	50-70 Amps
12 swg	2.5 mm	75-95 Amps

**NOTE:** With practice you will get a feel for the best current settings for different welding rod thicknesses.

2. Switch ON the machine.

## STRIKING AN ARC

**IMPORTANT:** *BEFORE you strike an arc, always bring the face shield up to protect your eyes.*

1. Line up the electrode exactly over the spot where you want to strike.
2. Position your shield in front of your face and tap the electrode down firmly. Once you tap down and contact is made, you must instantly raise the electrode to the required arc gap.
  - The arc gap should be roughly the same as the diameter of the electrode.
  - If you withdraw the electrode too far once the arc is struck, you will lose the arc and have to try again.

**NOTE:** One thing that usually happens when you are striking an arc is that the electrode sticks to the work. It should come unstuck with a sharp tug. If it will not free easily, turn off the welder immediately as it will quickly overheat, then give the join a tap from the chipping hammer. As you get more experienced, this will happen less.

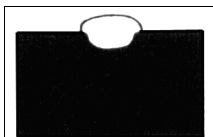
3. Once the arc is struck, move the electrode along its intended path, keeping the tip in the molten pool at all times.
  - You must also get used to feeding down the electrode steadily as it burns away.
  - An even crackling noise should be heard, which is an indication of a good weld.
4. Inspect the job carefully, the area of weld should be complete fusion of the electrode and parent metal(s).
  - Any slag which forms on the surface should be chipped away with the hammer/brush supplied.
  - If the resultant weld looks messy and irregular, this is an indication of porosity or slag contamination, and you have almost certainly failed to achieve the correct combination of speed and current. This is a common problem, so do not worry as practice will quickly cure this.

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## WELDING PITFALLS

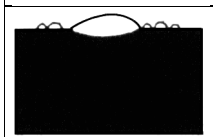
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The arc welding technique is an acquired skill and requires considerable practice before perfect results are obtained. The diagrams below will help to explain the pitfalls in your technique and how to overcome them.



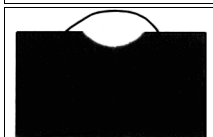
### ARC TOO SHORT

This causes irregular masses of weld to be deposited, with slag contamination on an uneven surface.



### ARC TOO LONG

This causes poor penetration resulting in a weak weld with excessive spatter and porosity. Surface of the weld is rough and the arc makes a hissing sound



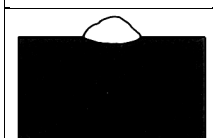
### ELECTRODE MOVED TOO SLOWLY

This causes a very wide and heavy deposit which overlaps at the sides. It is wasteful both in terms of time and electrode use.



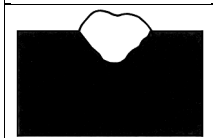
### ELECTRODE MOVED TOO QUICKLY

This causes poor penetration with a 'stringy' and incomplete weld deposit. Slag is very hard to remove.



### CURRENT TOO LOW

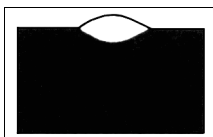
This causes poor penetration and causes the electrode to stick to the workpiece too readily. Also results in a very irregular and high weld deposit. Slag is very hard to remove.



### CURRENT TOO HIGH

This causes excessive penetration with spatter and deep pointed crater. It may also cause holes to be burned in the workpiece.

Burns electrodes very quickly.



### THE PERFECT WELD

With the correct combination of arc length, current regulation, inclination and speed of the electrode, you will, with practice, produce the perfect weld.

This should be regular with uniform ripples and no slag contamination. The arc will make a steady crackling sound.

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# MAINTENANCE

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**WARNING: ELECTRICITY CAN KILL - NEVER TOUCH LIVE ELECTRICAL COMPONENTS.**

**WARNING: DISCONNECT THE POWER SUPPLY BEFORE ALL INSPECTIONS AND MAINTENANCE OPERATIONS**

**WARNING: BEWARE HOT SURFACES.**

**WARNING: ALWAYS LET THE POWER SUPPLY COOL DOWN BEFORE ACCESSING INTERNAL COMPONENTS.**

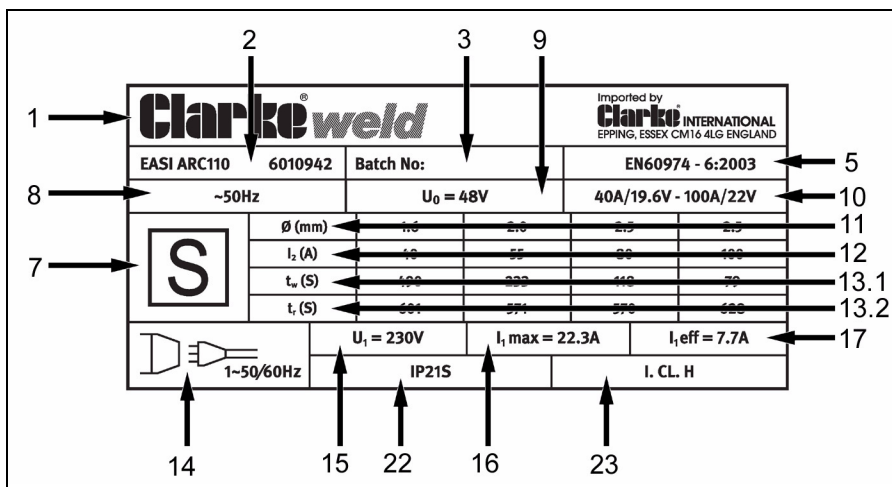
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Frequency of maintenance operations depends on the operating conditions, how intensively the welder is used and how clean or dirty the welding site is (aggressive atmospheres etc).

Always inspect the earth return and torch hose before use, to ensure they are in perfect condition and that the earth clamp is clean and secured correctly to the cable.

As a general rule, the power supply should be inspected at least annually. Consult your CLARKE dealer for advice if necessary.

# RATING PLATE



1	Name and address of manufacturer	13.2	Average reset time
2	Model number, part number	14	Energy Input symbol
3	Batch number	15	Rated supply voltage
4	N/A	16	Rated maximum supply current
5	British Standards applied	17	Maximum effective supply current
6	N/A	18	N/A
7	This symbol indicates that the unit is suitable for carrying out welding operations in an environment which has an increased risk of electric shock.	19	N/A
8	Welding Current symbol	20	N/A
9	Rated no-load voltage	21	N/A
10	Max welding current and corresponding load voltages	22	Degree of protection
11	Electrode Diameter Symbol	23	Class of protection.
12	Rated Welding current	24	N/A
13.1	Average load time		

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## SPECIFICATIONS

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Model	Easiarc110
Power Supply	230V @ 50Hz
Rated Max Input Current $I_{1Max}/I_{1eff}$	22.3/7.7 A
Open Circuit Voltage	48V
IP Rating	IP21S
Output Min./Max Current	40 - 100 Amps
Usable Electrodes	1.6 mm - 2.5 mm
Dimensions (l x w x h)	313 x 172 x 250 mm
Weight	11.85 kg
Part Number	6010942

**NOTE:** The details and specifications contained herein, are correct at the time of going to print. However, CLARKE International reserve the right to change specifications at any time without prior notice.

# DECLARATION OF CONFORMITY



**Clarke**<sup>®</sup>  
**INTERNATIONAL**

Hemndill Street, Epping, Essex CM16 4LG

## DECLARATION OF CONFORMITY

**This is an important document and should be retained.**

**We hereby declare that this product(s) complies with the following directive(s):**

2004/108/EC      *Electromagnetic Compatibility Directive.*

2006/95/EC      *Low Voltage Equipment Directive.*

2002/95/EC      *Restriction of Hazardous substances.*

**The following standards have been applied to the product(s):**

*EN 60974-6:2003, EN 60947-10, EN 55011:2007*

The technical documentation required to demonstrate that the product(s) meet(s) the requirement(s) of the aforementioned directive(s) has been compiled and is available for inspection by the relevant enforcement authorities.

The CE mark was first applied in: 2009

**Product Description:**      Arc Welding Machines

**Model number(s):**      Easiarc 110, 200

**Serial / batch Number:**      n/a

**Date of Issue:**      02/09/2010

**Signed:**

**J.A. Clarke**  
**Director**

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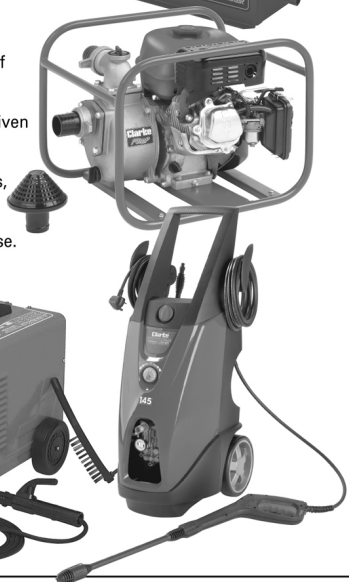
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